



ACTUARIAL

"The projected income stream from the contributions mandated by the Education Code will be sufficient to pay the Normal Costs. In addition, the DB Program does not have an Unfunded Actuarial Obligation as of the current valuation date."

—*Milliman and Robertson Inc.*



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October 20, 2000

Teachers' Retirement Board
California State Teachers' Retirement System

Re: Valuation of the Defined Benefit Program

Dear Members of the Board:

We have performed an actuarial valuation of the Defined Benefit Program of the California State Teachers' Retirement System as of June 30, 1999. In our opinion, the DB Program is an actuarially sound system based on the current actuarial assumptions. Our findings indicate the projected income stream from the contributions mandated by the Education Code will be sufficient to pay the Normal Costs. In addition, the DB Program does not have an Unfunded Actuarial Obligation as of the current valuation date.

Actuarial valuations are normally performed every two years, as of June 30 of each odd-numbered year. However, a special valuation was prepared as of June 30, 1998, which indicated the Unfunded Actuarial Obligation had been eliminated.

In preparing the valuation, we relied upon the financial and membership data furnished by the System, and the Report of Independent Accountants prepared by PriceWaterhouseCoopers. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness. Based on these tests, we believe the data to be sufficiently accurate for the purposes of our calculations.

Information presented included in this Actuarial Section of the 2000 Comprehensive Annual Financial Report, including the following supporting tables, is based on information found in our June 30, 1999 actuarial valuation report:

- Actuarial Assumptions and Methods
 - Post-retirement mortality
 - Probabilities of retirement
 - Probabilities of withdrawal from active service
 - Pay increases due to promotions and longevity
 - Economic assumptions
 - Mortality assumptions
 - Termination from disability
 - Rates of disability
 - Rates of termination
 - Probability of refund

- Analysis of Financial Experience

In addition, data for the fiscal year ending June 30, 1999, presented in Schedules I and II, and the summary of actuarial methods and assumptions in Schedule II of the Financial Section, are based on information in our valuation report.

The Teachers' Retirement Board has sole authority to determine the actuarial assumptions and methods used for the DB Program. The Board adopted all of the actuarial methods and assumptions used in the 1999 valuation.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the system and of current expectations concerning future economic conditions. In our opinion, the assumptions used in the actuarial valuation are appropriate for purposes of the valuation, are internally consistent, and reflect reasonable expectations. The assumptions represent our best estimate of future conditions affecting the DB Program. Nevertheless, the emerging costs of the DB Program will vary from those presented in this report to the extent that actual experience differs from that projected by the assumptions.

The actuarial valuation was prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the applicable Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries. In addition, the assumptions and methods used meet the parameters set for disclosures by Governmental Accounting Standards Board Statement No. 25.

The undersigned is an independent actuary, a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, an Enrolled Actuary, and experienced in performing valuations for large public employee retirement systems.

In conclusion, the DB Program of the California State Teachers' Retirement System is an actuarially sound system based on the current actuarial assumptions.

Respectfully submitted,



Mark O. Johnson, F.S.A., M.A.A.A., E.A.
Consulting Actuary

Summary of Actuarial Assumptions and Methods

CalSTRS, through its consulting actuary, performs an experience study every four years to determine appropriate demographic and economic assumptions. These assumptions are then applied when the consulting actuary performs an actuarial valuation to monitor the funding status of the Defined Benefit Program. The most recent experience study for the period 1995 through 1999 was completed as of June 30, 1999. The study was adopted by the Teachers' Retirement Board in February 2000. The most recent actuarial valuation was completed as of June 30, 1999, and adopted by the Teachers' Retirement Board in April 2000.

Following are the assumptions adopted by the Teachers' Retirement Board for this program.

- Investment return rate is 8.00 percent.
- Method used to value program assets for actuarial valuation purposes: Expected actuarial value adjusted for 33 percent of the difference between actual market value and expected actuarial value.
- Assumption for general wage increase because of inflation is 4.25 percent of which 3.5 percent is due to inflation and .75 percent is due to expected gains in productivity.
- The actuarial cost method used by the program is the entry age normal actuarial cost method, with actuarial gains and losses amortized over the remaining period required for the amortization of any unfunded actuarial obligation. Both are combined and amortized over 30 years, which is the board policy.
- The extent to which benefits are expected to increase as a result of cost-of-living type adjustments is 2 percent of the initial allowance provided annually beginning on September 1 following the first anniversary of the effective date of the allowance. Since 1971, this increase is applied to all eligible continuing allowances and is a provision of Part 13 of the Education Code, which governs the program.

- The last study of the program's actual experience was completed by the consulting actuary on January 21, 2000 (as of June 30, 1999) and adopted by the Teachers' Retirement Board February 3, 2000. All assumptions used in subsequent actuarial valuations were provided by that experience study. The most recent actuarial valuation of the program was completed March 17, 2000 (as of June 30, 1999) and adopted by the Teachers' Retirement Board April 6, 2000.

Table 1 Post-retirement mortality table for sample ages

Age	Male	Female
50	0.19 %	0.12 %
55	0.32	0.19
60	0.56	0.34
65	1.02	0.67
70	1.80	1.18
75	2.85	1.83
80	5.02	3.78
85	9.42	6.50
90	14.75	11.63
95	23.36	18.62
1999 CalSTRS Retired-M		1999 CalSTRS Retired-F

Table 2 Probabilities of retirement for sample ages

Age	Male	Female
55	5.0 %	6.0 %
60	20.0	12.0
65	20.0	19.0
70	100.0	100.0

Table 3 Probabilities of withdrawal from active service before and service retirement for sample ages

Duration	Entry Ages-Female			
	27	32	37	42
Males				
1	12.5%	12.5%	12.5%	12.5%
2	9.5	9.2	9.2	9.5
3	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	6.2
5	4.2	4.2	4.2	4.2
10	2.0	2.0	2.0	2.4
15	1.1	1.1	1.2	
20	0.6	0.6		
25	0.5			
Females				
1	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	7.5	6.8
3	7.3	6.5	5.5	5.3
4	7.1	5.6	4.5	4.0
5	5.8	4.2	3.5	3.0
10	2.0	1.7	1.4	1.6
15	0.9	1.0	0.9	
20	0.7	0.9		
25	0.6			

Table 4 Assumption for pay increases due to promotions and longevity for sample ages (exclusive of the assumed general wage increase, which includes inflation)

Duration	Entry Ages					
	Under 25	25-29	30-34	35-39	40-44	45 & Up
1	6.1%	5.8%	5.5%	5.4%	5.4%	4.0 %
10	3.2	3.0	2.7	2.3	2.2	1.6
20	1.2	1.1	1.1	0.7	0.7	0.5
30	0.9	0.7	0.6	0.4		

Table 5 Economic assumptions

	Past	Revised
Consumer Price Inflation	4.5%	3.5%
Investment Yield	8.00	8.00
Wage Inflation	5.50	4.25
Interest on Member Accounts	6.00	6.00
Growth in Active Membership	0.00	0.00
Administrative Expenses	0.25 *	0.00 **

*Percent of payroll

** Provided by gross investment return

DISCUSSION OF RECENT CHANGES IN:

The nature of the program—Since the last experience study as of June 30, 1995, program amendments have been made that affect both the June 30, 1999 experience study and the June 30, 1999 actuarial valuation. These program amendments, effective January 1, 1999, include:

- Increased age factor for members who retire after age 60
- Career factor for members who retire with more than 30 years of service
- Service Credit for unused sick leave

Actuarial assumptions—The actuarial valuation utilizes various methods and two different types of assumptions: economic and demographic. Economic assumptions are related to the general economy and its impact on CalSTRS or to the operation of the membership. Demographic assumptions predict the future experience of the membership with respect to eligibility and benefits and are directly related to the specific experience of CalSTRS members.

Economic assumptions: The two major economic assumptions are investment return and wage growth and each is affected by the underlying assumed rate of inflation. Tables 1–5 provide the economic actuarial assumptions for this program as reflected in the most recent experience study of the program (as of June 30, 1999).

Demographic assumptions: Tables 6–11 provide past and revised demographic assumption information for this program as reflected in the most recent experience study of the program (as of June 30, 1999).

Table 6 Mortality assumptions

	Past	Revised
Retired Members		
Male	1983 GAM-M (-3)	1999 CalSTRS Retired-M
Female	1983 GAM-F (-1)	1999 CalSTRS Retired-F
Active Members		
Male	1983 GAM-M (-5)	1999 CalSTRS Retired-M (-2)
Female	1983 GAM-F (-3)	1999 CalSTRS Retired-F (-2)
Beneficiaries		
Male	1983 GAM-M (-3)	1999 CalSTRS Beneficiary-M
Female	1983 GAM-F (-1)	1999 CalSTRS Beneficiary-F
Pre-1972 Disabilities		
Male	1951 GAM-M (-1)	1951 GAM-M (-1)
Female	1951 GAM-M (-8)	1951 GAM-M (-7)

Table 7 Termination from disability

	Past	Revised
Male	1983 GAM-M (Min. 3.5%)	1994 GAM-M (Min. 2.5% with select rates in first 3 years)
Female	1983 GAM-F (Min. 2.2%)	1994 GAM-F (Min. 2.2% with select rates in first 3 years)

ACTUARIAL METHODS

Actuarial Cost Method Entry Age Normal Actuarial Cost Method

Asset Valuation Method Expected Value with one-third adjustment to Market Value

The Asset Valuation Method changed for the most recent actuarial valuation, as of June 30, 1999. The current asset smoothing method projects an Expected Value of Assets using the assumed rate of investment return, then one-third of the difference between the Expected Value and the Market Value is recognized in the Actuarial Value of Assets. The prior method recognized one-fourth of the difference. The actuarial gain due to the change in the asset smoothing method is \$2.629 billion.

CalSTRS contracts for all actuarial services. The current contractor, Milliman and Robertson, has been the program's actuary since January 15, 2000.

There are no other specific assumptions that have a material impact on valuation results for this program.

The data displayed in Table 12 (on page 58) is as of June 30 of the specified year. Other information, specifically annual payroll amounts, reported in the financial section of this report will generally not be consistent. The reason for this is that the financial data reflects payroll for all individuals who were active during the year, while Table 12 only includes those individuals who are active as of June 30. It does not include those individuals who were active at some point during the year but not as of June 30.

Amounts provided in Table 13 (on page 58) represent the status of the population as of June 30 of the indicated year. The information provided in the Removed From Rolls and Rolls End of Year columns include the application of the annual post-retirement 2 percent not-compounded cost-of-living adjustment.

The data provided for each year end in Table 13 is a snapshot of the population taken following year-end closing for the indicated period. It is likely adjustments will be made subsequent to this closing. No attempt is made to update the data in Table 13 for these adjustments.

Because of the potential for post-closing adjustments that are not updated in Table 13, and for post-retirement adjustments that are included in the individual accounts rather than separately maintained, any update of a prior end of year total using additions

Table 8 Service retirement (sample ages)

	Past		Revised	
	Benefits			
	Pre-1999	1999	Pre-1999	1999
Male				
55	6.3%	4.3%	5.8%	5.0%
60	26.1	19.1	25.0	20.0
65	28.3	53.3	20.0	20.0
70	100.0	100.0	100.0	100.0
Female				
55	6.8%	4.8%	7.0%	6.0%
60	19.8	12.8	22.0	12.0
65	24.6	49.6	18.0	19.0
70	100.0	100.0	100.0	100.0

and deletions from the next year most likely will not equal the total provided for the next year.

An experience analysis was performed for the program in 1995 and again in 1999. As a result of the performance of these studies, changes were made to the actuarial assumptions and to the funding methods. The following significant plan changes have taken place during the time depicted in Table 14. These program amendments, effective January 1, 1999, include:

- Increased age factor for members who retire after age 60
- Career factor for members who retire with more than 30 years of service
- Service Credit for unused sick leave

The most recent actuarial valuation of the system (as of June 30, 1999) determined there is no unfunded actuarial obligation for this program. The prior actuarial valuation (as of June 30, 1998) also indicated there was no unfunded actuarial obligation.

With the exception of the actuarial valuation performed as of June 30, 1998, actuarial valuations are performed every two years to analyze the sufficiency of the statutory contributions to meet the current and future obligations of the program. By using the actuarial methods and assumptions adopted by the Teachers' Retirement Board, the actuarial valuation provides the best estimate of the program's long-term financing.

Comparing the unfunded actuarial obligation as of two valuation dates does not provide enough information to determine if there were actuarial gains or losses. The correct comparison is between the unfunded actuarial obligation on the valuation date and the expected unfunded actuarial obligation projected from the prior valuation date using the actuarial assumptions in effect for the period of comparison.

Table 15 (on page 60) shows the actuarial obligation and the elements to project that figure forward: the normal cost, less benefit payments, plus a charge for interest at the assumed rate. In addition, the table shows actuarial gains, in parentheses, and losses by individual component.

Actuarial gains reduce the unfunded actuarial obligation as of the valuation date, and actuarial losses increase the unfunded actuarial obligation. Most actuarial gains and losses are a result of short-term fluctuations in experience or changes in actuarial assumptions. Because of the long-term nature of actuarial assumptions, future patterns of emerging experience may offset these short-term fluctuations.

Table 9 Disability

Rate of Disability (sample ages)				
		Past	Revised	
Coverage A				
Male	30	0.03%	0.030%	
	40	0.08	0.081	
	50	0.16	0.159	
Female	30	0.03%	0.030%	
	40	0.08	0.090	
	50	0.18	0.219	
Coverage B				
		Entry Age Under 37	Entry Age Under 40	
Male	30	0.07%	0.030	
	35	0.12	0.051	
	40	0.13	0.120	
	45	0.16	0.150	
	50	0.20	0.195	
	55	0.27	0.270	
Female	30	0.03 %	0.030	
	35	0.05	0.051	
	40	0.09	0.090	
	45	0.14	0.141	
	50	0.23	0.231	
	55	0.32	0.318	
		Entry Age 42	Entry Age 47	Entry Age 40+
Male	45	0.23%		0.196%
	50	0.36	0.49%	0.288
	55	0.46	0.80	0.390
Female	45	0.23%		0.231%
	50	0.36	0.40%	0.360
	55	0.46	0.60	0.459

Table 10 Withdrawal all terminations

Male	14,117	Female	28,460					
Rates of termination by sample duration of membership and sample entry age								
Duration	Past				Revised			
	Sample Entry Ages				Sample Entry Ages			
	27	32	37	42	27	32	37	42
Male								
1	14.8%	14.8%	14.8%	14.8%	12.5%	12.5%	12.5%	12.5%
2	8.8	8.8	8.8	8.8	9.5	9.2	9.2	9.5
3	6.8	6.8	6.8	6.8	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	5.8	5.8	5.8	5.8	6.2
5	5.0	5.0	5.0	5.0	4.2	4.2	4.2	4.2
10	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.4
15	1.3	1.3	1.3		1.1	1.1	1.2	
20	0.8	0.8			0.6	0.6		
25	0.5				0.5			
Female								
1	14.8 %	14.8%	14.8%	14.8%	10.0%	10.0%	10.0%	10.0%
2	8.8	8.6	7.7	6.6	8.3	8.3	7.5	6.8
3	7.7	6.8	5.4	5.1	7.3	6.5	5.5	5.3
4	6.8	5.8	4.4	4.3	7.1	5.6	4.5	4.0
5	5.9	5.0	3.8	3.6	5.8	4.2	3.5	3.0
10	2.5	2.2	1.9	1.6	2.0	1.7	1.4	1.6
15	1.2	1.2	1.2		0.9	1.0	0.9	
20	0.9	0.9			0.7	0.9		
25	0.8				0.6			
Probability of refund by sample durations of membership and sample entry ages								
Duration	Sample Entry Ages				Sample Entry Ages			
	27	32	37	42	27	32	37	42
Male								
Under 5	100%	100%	100%	100%	100%	100%	100%	100%
10	60	50	50	45	40	40	45	40
15	50	45	45		40	35	35	
20	40	40			35	30		
25	30				20			
Female								
Under 5	100%	100%	100%	100%	100%	100%	100%	100%
10	40	40	40	35	25	30	30	25
15	35	35	35		20	30	20	
20	30	25			20	20		
25	20				20			

Table 11 Promotional salary increases (assumption for salaries due to promotions and longevity, exclusive of the assumed general wage increase)

Duration	Past				Revised					
	Sample Entry Ages				Sample Entry Ages (Unisex)					
	27	32	37	42	Under 25	25–29	30–34	35–39	40–44	45+
Male										
1	8.0%	9.5%	9.8%	8.9%	6.1%	5.8%	5.5%	5.4%	5.4%	4.0%
10	3.6	2.6	1.9	2.0	3.2	3.0	2.7	2.3	2.2	1.6
20	1.1	0.7	0.7	0.4	1.2	1.1	1.1	0.7	0.7	0.5
30	0.7	0.6			0.9	0.7	0.6	0.4		
Female										
1	7.2%	7.7%	8.5%	5.4%						
10	3.1	2.5	2.7	2.6						
20	0.7	0.6	0.9	1.0						
30	0.3	0.4								

Table 12 Schedule of active member valuation data

Date (as of June 30)	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
1995	327,513	\$12,411,264,262	\$37,895	1.0%
1996	336,725	12,994,673,531	38,591	1.8
1997	364,000	14,371,068,403	39,481	2.3
1998	385,530	15,725,658,541	40,790	3.3
1999	402,220	17,007,886,951	42,285	3.7
2000	420,530	18,224,271,726	43,336	2.5

Table 13 Schedule of retired members and beneficiaries added to and removed from rolls (\$ thousands)

Date (as of June 30)	Added to Rolls		Removed from Rolls		Rolls–End of Year		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
1995	7,863	\$185,022	4,351	\$51,817	146,805	\$2,438,513	8.1%	\$16,611
1996	7,737	186,916	4,642	55,635	150,805	2,621,422	7.5	17,383
1997	6,672	163,744	4,717	59,864	153,639	2,781,406	6.1	18,104
1998	7,996	206,368	4,908	64,640	157,747	2,985,017	7.3	18,923
1999	7,874	236,923	5,105	69,463	161,457	3,220,227	7.9	19,945
2000	8,184	261,607	5,550	78,483	165,282	3,473,208	7.9	21,014

Table 14 Solvency test (\$ millions)

*Valuation Date (as of June 30)	Aggregate Accrued Liabilities For			Actuarial Value of Assets	Funding of Liabilities		
	(1) Active Member Contributions On Deposit	(2) Future Benefits to Benefit Recipients	(3) Service Already Rendered by Active Members		(1)	(2)	(3)
1995	\$14,478	\$25,416	\$23,497	\$55,207	100.0%	100.0%	65.2%
1997	17,041	29,127	23,684	67,980	100.0%	100.0%	92.1%
1998	18,451	31,158	24,625	77,290	100.0%	100.0%	112.4%
1999 (a)	21,337	33,019	31,993	90,001	100.0%	100.0%	111.4%

*No actuarial report is prepared in even-numbered years, except for the June 30, 1998 report. No estimation using actuarial methodology is made in years between valuations.
(a) Effective January 1, 1999, program changed to increase retirement multiplier and add career factor and service credit for unused sick leave.

INDEPENDENT ACTUARIAL REVIEW

Actuarial services for the California State Teachers' Retirement System are provided under contract by a qualified independent actuarial firm, with additional review provided by the staff actuary.

The work performed for CalSTRS by the independent actuarial firm is subject to periodic audit by the Bureau of State Audits. Also, through the competitive acquisition process, the work of a prior actuary will be verified in a subsequent actuarial valuation performed by a new contract actuary. Should the same actuarial firm continue for a period of 10 years, provision is made for an independent review of that firm's work through an actuarial audit completed by another firm. These audit services are acquired using the competitive acquisition process.

Summary of Defined Benefit Program Provisions

(considered in the June 30, 1999 actuarial valuation)

SERVICE RETIREMENT

Eligibility

Age 60 with five years of credited California service.

Benefit Formula

2 percent of final compensation for each year of credited service at age 60. (Final compensation is the average salary earnable for the highest three consecutive years of credited California service.) All CalSTRS members who retire on or after January 1, 1999, receive service credit for unused sick leave at retirement.

Exceptions:

- 1) For an eligible classroom teacher who retires after June 30, 1990, final compensation may be the highest annual compensation earnable during any period of 12 consecutive months while a member of the plan. This provision only applies to a qualified classroom teacher, as defined, who is employed by an employer who has entered into a written agreement with the exclusive employee representative to make this provision applicable.

Table 15 Analysis of financial experience (gains and losses in unfunded actuarial obligation resulting from differences between assumed and actual experience) (\$ Billions)

	Actuarial Valuation as of June 30	
	1999	1998
Actuarial Obligation at June 30:	74,234(1998)	69,852(1997)
Normal Cost	2,441	2,257
Benefit Payments	(3,220)	(3,172)
Expected Interest	6,005	5,552
Expected Actuarial Obligation at June 30:	79,460	74,489
Expected Actuarial Value of Assets at June 30:	86,150	73,908
Expected Unfunded Actuarial Obligation at June 30:	(6,690)	581
Actuarial (Gains) & Losses		
Change in Asset Method	(2,629)	
Change in Actuarial Assumptions	(3,187)	
Investment Return Assumption	(1,195)	(3,382)
Demographic Assumptions	2,616	119
Net Change Other Sources	7,460	(374)
Total Actuarial (Gains) & Losses	3,065	(3,637)
Unfunded Actuarial Obligation at June 30:	(3,625)	(3,056)

- 2) Effective January 1, 1994, final compensation may be the highest average annual compensation earnable during any three nonconsecutive years (one year is a period of 12 consecutive months) of membership in the program. This alternative is available only to a member whose salary has been reduced because of a reduction in school funds.

Early Retirement

Eligibility

Age 55 with five years credited California service. A 1/2 percent reduction is made in the normal retirement allowance for each full month or partial month the member is younger than age 60.

30 and Out

Age 50 with 30 years of credited California service. The standard (1/2 percent) early retirement reduction is applied from 60 to age 55 and a 1/4 percent reduction is made for each full or partial month the member is younger than age 55.

Retirement After Normal Retirement Age

Members continue to earn additional service credit after age 60. As part of the 1999 benefit increase, the 2 percent age factor increases by 0.033 percent for each quarter of a year of age that the member is over age 60, up to a maximum of 2.4 percent.

Over 30 Years of Service Credit

Members who retire with at least 30 years of earned service credit have an additional 0.2 percent (two-tenths of 1 percent) added to the age factor up to a maximum age factor of 2.4 percent. The 30 years of service credit to qualify for the career bonus does not include credit from unused sick leave, nonqualified service or Golden Handshake.

Pre-Retirement Election of an Option

Any member who is eligible for service retirement may make a pre-retirement election to receive a modified joint and survivor allowance payable at retirement in place of the unmodified allowance. If the member dies prior to retirement, the option beneficiary will receive a lifetime allowance based on

the option selected. This election is available for those members who qualify for retirement and do not wish to retire, but want to ensure a monthly lifetime income to a beneficiary in the event death occurs prior to retirement. However, the pre-retirement election makes the member ineligible for a family or survivor benefit allowance unless the election is canceled prior to death.

Post-Retirement Adjustment

Benefit Improvement Factor

There is a 2 percent simple increase on each September 1 following the first anniversary of the effective date of the allowance (the date on which the monthly allowance began to accrue). The annual 2 percent increase is applied to all continuing allowances.

Death Benefit for Retired Members

Designated beneficiaries of CalSTRS retired members receive a \$5,598 lump-sum death payment. The amount of the death payment may be adjusted by the Teachers' Retirement Board following each actuarial valuation based on changes to the All-Urban California Consumer Price Index.

Termination of Membership

After termination of employment, a member may request a refund of contributions and interest as credited to the member's account to date of withdrawal.

A refund terminates membership in and all rights to future benefits from the program.

DISABILITY ALLOWANCE — COVERAGE A

Eligibility

Age Limit: Under age 60.

Service Credit: Minimum of five years.

Employment Status: May apply for disability allowance while still employed.

Benefit Formula

Allowance

50 percent of final compensation

or

5 percent of final compensation for each year of service credit if over age 45 with less than 10 years of service credit.

plus

Children's Benefits

10 percent of final compensation for each eligible dependent child, up to a maximum of 40 percent of final compensation. The increment for each eligible child continues until the child attains age 22.

Pre-Retirement Election of an Option

Any member receiving a disability allowance who is eligible to retire may make a pre-retirement election to receive a modified joint and survivor allowance payable at retirement in place of the unmodified allowance. If the member dies prior to retirement, the option beneficiary will receive a lifetime allowance based on the option selected. The pre-retirement election makes the member's survivor ineligible for the family allowance unless the election is canceled prior to the member's death.

Conversion To Service Retirement

Allowance is payable for duration of disability or until conversion to a service retirement allowance at normal retirement age. A member's allowance is based on the projected final compensation and projected service to normal retirement age; however, the service retirement allowance may not exceed the terminated disability allowance.

Death Benefit

A \$5,598 lump-sum death payment is payable to the designated beneficiary upon the death of the disabled member. The amount of the death payment may be adjusted by the Teachers' Retirement Board following each actuarial valuation based on changes to the All Urban California Consumer Price Index.

plus

If the member has not elected a pre-retirement option, a family allowance is payable to the surviving spouse who has children eligible for a children's benefit.

or

If there are no eligible children, the spouse may elect to take a lump-sum refund of the contributions and interest remaining in the member's account or receive an Option 3 beneficiary allowance at age 60, or immediately with a reduction based on the member's and spouse's ages at the time the benefit begins.

DISABILITY RETIREMENT — COVERAGE B

Eligibility

Age Limit: None.

Service Credit: Minimum of five years.

Employment Status: May apply for disability retirement while still employed.

Benefit Formula

Allowance

50 percent of final compensation regardless of age and service credit.

plus

Children's Benefits

10 percent of final compensation for each eligible dependent child, up to a maximum of 40 percent of final compensation. The increment for each eligible child continues until the child attains age 21, regardless of student, marital or employment status.

Option Election

May elect a joint and survivor option upon application for a disability retirement.

Conversion to Service Retirement

No conversion; allowance is payable for the duration of the disability.

Death Benefit

A \$5,598 lump-sum death payment is payable to the designated beneficiary upon the death of the disabled member. The amount of the death payment may be adjusted by the Teachers' Retirement Board following each actuarial valuation based on changes to the All Urban California Consumer Price Index.

plus

If an option was selected at the time of disability retirement, a lifetime allowance is payable to the option beneficiary.

or

If no option was selected, a lump-sum refund of any remaining contributions and interest in the member's account is payable to the eligible beneficiary.

FAMILY ALLOWANCE—COVERAGE A

Eligibility

Status: Member was actively employed or receiving a disability allowance at the time of death and had not elected a pre-retirement election of an option.

Service Credit: One or more years.

Lump-Sum Death Payment

A \$5,598 lump-sum death payment is payable to the designated beneficiary upon the death of the member. The amount of the death payment may be adjusted by the Teachers' Retirement Board following each actuarial valuation based on changes to the All-Urban California Consumer Price Index.

Basic Benefit

When there are eligible children, a family allowance will be paid. If there are no eligible children, the spouse may elect to receive an Option 3 beneficiary allowance at age 60 or immediately with a reduction based on the member's and spouse's ages at the time the benefit begins or take a lump-sum refund of the remaining contributions and interest in the member's account.

Surviving Spouse

Eligibility

Married to the member for at least one year on the date of death.

Allowance

The surviving spouse with eligible children would receive 40 percent of the member's final compensation for as long as there is at least one eligible child.

An additional 10 percent of final compensation is payable for each eligible child, up to a maximum benefit of 50 percent for the children's increment.

To be eligible, dependent children must be unmarried and under age 22.

When there are no eligible children, the spouse may elect to receive an Option 3 beneficiary allowance or take a lump-sum refund of the remaining contributions and interest in the member's account.

If there is no surviving spouse, an allowance of 10 percent of the member's final compensation is payable to each eligible child up to a maximum of 50 percent of final compensation.

If there is neither a surviving spouse nor a dependent child, the member's dependent parents may elect to receive an Option 3 beneficiary allowance at age 60 or over, or take a lump-sum refund of the remaining contributions and interest in the member's account.

Contributions and Interest

If there is no surviving spouse, eligible children, or dependent parent, the contributions and interest are paid to the designated beneficiary.

Death Benefit for Retired Members

Designated beneficiaries of CalSTRS retired members receive a \$5,598 lump-sum death payment. The amount of the death payment may be adjusted by the Teachers' Retirement Board following each actuarial valuation based on changes to the All-Urban California Consumer Price Index.

SURVIVOR BENEFITS—COVERAGE B

Eligibility

Status: Member was actively employed at the time of death and had not elected a pre-retirement election of an option.

Service Credit: One or more years.

Lump-Sum Death Payment

A \$22,394 lump-sum death payment is payable to the designated beneficiary if the member had one or more years of credited service. The amount of the death payment may be adjusted by the Teachers' Retirement Board following each actuarial valuation based on changes to the All-Urban California Consumer Price Index.

Basic Benefit

The surviving spouse may elect to receive a monthly allowance or take a lump-sum of the contributions and interest in the member's account.

Surviving Spouse

Eligibility

Married to the member for at least one year on the date of death.

Allowance

If the surviving spouse elects not to take a lump-sum refund of the contributions and interest in the member's account, the surviving spouse would receive one half of the member's Option 3 allowance,

beginning on the member's 60th birthday, or immediately with a reduction based on the member's and spouse's age at the time the benefit begins. There is no dependent child requirement.

If the surviving spouse elects a monthly allowance, each eligible dependent child would receive 10 percent of the member's final compensation with a maximum benefit of 50 percent. The benefit is dependent upon the spouse electing a monthly allowance.

To be eligible, dependent children must be under age 21. Student, marital or employment status will not terminate the benefit.

If there is no surviving spouse, no children's benefits are payable.

Contributions and Interest

If there is no surviving spouse, the contributions and interest are paid to the member's designated beneficiary.

FUNDING

Members Contribution: Eight percent of creditable compensation.

Employers Contribution: Eight percent of the total creditable compensation on which member contributions are based.

plus

0.25 percent of the total creditable compensation on which members' contributions are based to pay costs for unused sick leave service credit.

State Contribution: Commencing July 1, 1999, 3.102 percent of the total of the creditable compensation of the immediately preceding calendar year upon which members' contributions are based calculated annually on October 1, paid in four equal quarterly payments. Used to fund certain benefit enhancements effective January 1, 1999.

plus

Commencing October 1, 1998, 0.524 percent adjustable annually in 0.25 percent increments up to a maximum of 1.505 percent, of the total of the creditable compensation of the immediately preceding calendar year upon which members' contributions are based

calculated annually on October 1, paid in four equal quarterly payments. This contribution is reduced to zero if there is no unfunded obligation or normal cost deficit for benefits in effect on July 1, 1990.

Changes in Defined Benefit Program Provisions

Since the last annual financial report, program amendments have been made that would affect the next actuarial valuation. The amendment described below was effective January 1, 2000, and, therefore, not considered for the June 30, 1999 actuarial valuation.

Minimum Guarantee

Members who retired before January 1, 2000, with at least 20 years of service receive a minimum allowance of \$15,000 annually up to \$20,000 with 30 years of service. The minimum guarantee is modified for an option to the extent the member's allowance is modified for an option.



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October 20, 2000

Teachers' Retirement Board
California State Teachers' Retirement System

Re: Valuation of the Cash Balance Benefit Program

Dear Members of the Board:

We have performed an actuarial valuation of the Cash Balance Benefit Program of the California State Teachers' Retirement System as of June 30, 1999. In our opinion, the CBB Program is an actuarially sound system based on the current actuarial assumptions. Our findings indicate the projected income stream from the contributions will be sufficient to pay the Normal Costs. In addition, the CBB Program had an Actuarial Surplus of \$223 thousand as of June 30, 1999.

Actuarial valuations are performed as of June 30 of each year.

In preparing the valuation, we relied upon the financial and membership data furnished by the System. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness. Based on these tests, we believe the data to be sufficiently accurate for the purposes of our calculations.

Information presented included in this Actuarial Section of the 2000 Comprehensive Annual Financial Report, including the following supporting tables, is based on information found in our June 30, 1999 actuarial valuation report:

- Actuarial Assumptions and Methods
 - Post-retirement mortality
 - Probabilities of retirement
 - Probabilities of withdrawal from active service
 - Pay increases due to promotions and longevity
 - Economic assumptions
 - Mortality assumptions
 - Termination from disability
 - Rates of disability
 - Rates of termination
 - Probability of refund

- Analysis of Financial Experience

In addition, data for the fiscal year ending June 30, 1999, presented in Schedules I and II, and the summary of actuarial methods and assumptions in Schedule II of the Financial Section, are based on information in our valuation report.

The Teachers' Retirement Board has sole authority to determine the actuarial assumptions and methods used for the CBB Program. The Board adopted all of the actuarial methods and assumptions used in the 1999 valuation.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the system and of current expectations concerning future economic conditions. In our opinion, the assumptions used in the actuarial valuation are appropriate for purposes of the valuation, are internally consistent, and reflect reasonable expectations. The assumptions represent our best estimate of future conditions affecting the CBB Program. Nevertheless, the emerging costs of the CBB Program will vary from those presented in this report to the extent that actual experience differs from that projected by the assumptions.

The actuarial valuation was prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the applicable Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries. In addition, the assumptions and methods used meet the parameters set for disclosures by Governmental Accounting Standards Board Statement No. 25.

The undersigned is an independent actuary, a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, an Enrolled Actuary, and experienced in performing valuations for large public employee retirement systems.

In conclusion, the CBB Program of the California State Teachers' Retirement System is an actuarially sound system based on the current actuarial assumptions.

Respectfully submitted,



Mark O. Johnson, F.S.A., M.A.A.A., E.A.
Consulting Actuary

Summary of Actuarial Assumptions and Methods

CalSTRS, through its consulting actuary, will perform an experience study at least every four years to determine appropriate demographic and economic assumptions. These assumptions are then applied every year when the consulting actuary performs an actuarial valuation to monitor the funding status of the Cash Balance Benefit Program. The most recent actuarial valuation was completed as of June 30, 1999, and adopted by the Teachers' Retirement Board March 9, 2000.

The Cash Balance Benefit Program was established July 1, 1996. The first experience study of the program was completed January 21, 2000. The experience study was adopted by the Teachers' Retirement Board on February 3, 2000, and used to complete the latest actuarial valuation. Following are the assumptions adopted by the Teachers' Retirement Board for this program.

- Investment return rate is 8.00 percent.
- Method used to value plan assets for actuarial valuation purposes: Fair market value.
- Assumption for general wage increase because of inflation is 4.25 percent, of which 3.5 percent is due to inflation and .75 percent is due to expected gains in productivity.
- The actuarial cost method used by the program is the traditional unit credit cost method.

Table 1 Post-retirement mortality table for sample ages

Age	Male	Female
50	0.19%	0.12%
55	0.32	0.19
60	0.56	0.34
65	1.02	0.67
70	1.80	1.18
75	2.85	1.83
80	5.02	3.78
85	9.42	6.50
90	14.75	11.63
95	23.36	18.62
1999 CalSTRS Retired-M		1999 CalSTRS Retired-F

Table 2 Probabilities of retirement for sample ages

Age	Male	Female
55	5.0%	6.0%
60	20.0	12.0
65	20.0	19.0
70	100.0	100.0

- The Cash Balance Benefit Program does not provide cost-of-living adjustments for benefit recipients.

Discussion of recent changes in:

The nature of the program—The Cash Balance Benefit Program is a relatively new plan, established July 1, 1996. All provisions of the program were considered when completing the most recent actuarial valuation.

Actuarial assumptions—The following assumptions were used to complete the valuation for this program.

The economic assumptions for the actuarial valuation as of June 30, 1999, did not affect the unfunded actuarial obligation. The economic assumptions for this program will have minimal impact under the traditional unit credit cost method or only have significance when participants elect to annuitize the account balance. Under the program, a participant must have at least \$3,500 in his or her account to elect to annuitize the account balance.

Future service credits are determined by using individual records and projecting future service credits for each member based on that member's actual service credit earned in the prior year.

The demographic assumptions for the actuarial valuation as of June 30, 1999, did not affect the unfunded actuarial obligation. The demographic assumptions for this plan will have minimal impact under the traditional unit credit cost method or only have significance when participants elect to annuitize the account balance. Under the plan, a participant must have at least \$3,500 in his or her account to elect to annuitize the account balance.

Table 3 Probabilities of withdrawal from active service before age and service retirement for sample ages

Duration	Entry Ages				
	Under 25	25 – 29	30 – 34	35 – 39	40 and Up
Males					
1	12.5%	12.5%	12.5%	12.5%	12.5%
2	9.5	9.5	9.2	9.2	9.5
3	7.7	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	5.8	6.2
5	5.0	4.2	4.2	4.2	4.2
10	2.0	2.0	2.0	2.0	2.4
15	1.1	1.1	1.1	1.2	
20	0.6	0.6	0.6		
25	0.5	0.5			
30	0.3				
35	0.3				
40	0.3				
Females					
1	10.0%	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	8.3	7.5	6.8
3	7.7	7.3	6.5	5.5	5.3
4	7.1	7.1	5.6	4.5	4.0
5	5.5	5.8	4.2	3.5	3.0
10	2.3	2.0	1.7	1.4	1.6
15	1.1	0.9	1.0	0.9	
20	0.6	0.7	0.9		
25	0.6	0.6			
30	0.3				
35	0.3				
40	0.3				

Table 4 Assumption for pay increases due to promotions and longevity for sample ages (exclusive of the assumed general wage increase, which includes inflation)

Duration	Entry Ages					
	Under 25	25 – 29	30 – 34	35 – 39	40 – 44	45 and Up
1	6.1%	5.8%	5.5%	5.4%	5.4%	4.0%
2	5.6	5.1	4.9	4.7	4.7	3.3
3	5.5	5.0	4.7	4.6	4.6	3.0
4	5.5	4.8	4.6	4.4	4.4	2.9
5	5.5	4.8	4.5	3.8	3.8	2.6
10	3.2	3.0	2.7	2.3	2.2	1.6
15	1.5	1.5	1.4	1.1	1.1	0.8
20	1.2	1.1	1.1	0.7	0.7	0.5
25	1.1	1.0	0.9	0.5	0.6	
30	0.9	0.7	0.6	0.4		
35	0.7	0.7	0.5			
40	0.8	0.7				
45	0.8					

Table 5 Economic assumptions

Consumer Price Inflation	3.50%
Investment Yield	8.00
Wage Inflation	4.25
Interest on Participant Accounts	8.00

Table 6 Mortality assumptions

	Past	Revised
Retired Members		
Male	1983 GAM-M (-3)	1999 CalSTRS Retired-M
Female	1983 GAM-F (-1)	1999 CalSTRS Retired-F
Active Members		
Male	1983 GAM-M (-5)	1999 CalSTRS Retired-M (-2)
Female	1983 GAM-F (-3)	1999 CalSTRS Retired-F (-2)
Beneficiaries		
Male	1983 GAM-M (-3)	1999 CalSTRS Beneficiary-M
Female	1983 GAM-F (-1)	1999 CalSTRS Beneficiary-F

Table 7 Termination from disability

	Past	Revised
Male	1983 GAM-M (Minimum 3.5%)	1994 GAM-M (Minimum 2.5% with select rates in first 3 years)
Female	1983 GAM-F (Minimum 2.2%)	1994 GAM-F (Minimum 2.2% with select rates in first 3 years)

Table 8 Service retirement (sample ages)

		Past	Revised
Male	55	6.3%	5.0%
	60	26.1	20.0
	65	28.3	20.0
	70	100.0	100.0
Female	55	6.8%	6.0%
	60	19.8	12.0
	65	24.6	19.0
	70	100.0	100.0

Actuarial methods

Actuarial Cost Method Traditional Unit Credit

Asset Valuation Method Fair Market Value

The actuarial methods used for the program's actuarial valuation as of June 30, 1999 result in an Actuarial Surplus of \$223,000. This surplus is primarily due to the merger of the Defined Benefit and the Cash Balance plans into a single plan with a separate Defined Benefit Program and a Cash Balance Benefit Program effective January 1, 1999, and the discharge of the \$1.3 million loan from the Teacher's Retirement Fund.

CalSTRS contracts for all actuarial services. The current contractor, Milliman and Robertson, has been CalSTRS' actuary since January 15, 2000.

Table 9 Disability rates (sample ages)

		Past	Revised	
		Entry Age Under 37	Entry Age Under 40	
Male	25	0.02%	0.021%	
	30	0.07	0.030	
	35	0.12	0.051	
	40	0.13	0.120	
	45	0.16	0.150	
	50	0.20	0.195	
55	0.27	0.270		
Female	25	0.03%	0.030%	
	30	0.03	0.030	
	35	0.05	0.051	
	40	0.09	0.090	
	45	0.14	0.141	
	50	0.23	0.231	
55	0.32	0.381		
		Entry Age 42	Entry Age 47	Entry Age 40 and Up
Male	45	0.23%		0.196%
	50	0.36	0.49%	0.288%
	55	0.46	0.80	0.390
Female	45	0.23%		0.231%
	50	0.36	0.40%	0.360
	55	0.46	0.60	0.459

There are no other specific assumptions that have a material impact on valuation results for this program.

Independent actuarial review

Actuarial services for the State Teachers' Retirement System are provided under contract by a qualified independent actuarial firm.

The work performed for CalSTRS by the independent actuarial firm is subject to periodic audit by the Bureau of State Audits. Also, through the competitive acquisition process, the work of a prior actuary will be verified in a subsequent actuarial valuation performed by a new contract actuary. Should the same actuarial firm continue for a period of 10 years, provision is made for an independent

Table 10 Withdrawal rates (rates of termination by sample durations of membership and sample entry ages.)

Duration	Past Sample Entry Ages				Revised Sample Entry Ages			
	27	32	37	42	27	32	37	42
Male								
1	14.8%	14.8%	14.8%	14.8%	12.5%	12.5%	12.5%	12.5%
2	8.8	8.8	8.8	8.8	9.5	9.2	9.2	9.5
3	6.8	6.8	6.8	6.8	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	5.8	5.8	5.8	5.8	6.2
5	5.0	5.0	5.0	5.0	4.2	4.2	4.2	4.2
10	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.4
15	1.3	1.3	1.3		1.1	1.1	1.2	
20	0.8	0.8			0.6	0.6		
25	0.5				0.5			
Female								
1	14.8%	14.8%	14.8%	14.8%	10.0%	10.0%	10.0%	10.0%
2	8.8	8.6	7.7	6.6	8.3	8.3	7.5	6.8
3	7.7	6.8	5.4	5.1	7.3	6.5	5.5	5.3
4	6.8	5.8	4.4	4.3	7.1	5.6	4.5	4.0
5	5.9	5.0	3.8	3.6	5.8	4.2	3.5	3.0
10	2.5	2.2	1.9	1.6	2.0	1.7	1.4	1.6
15	1.2	1.2	1.2		0.9	1.0	0.9	
20	0.9	0.9			0.7	0.9		
25	0.8				0.6			

review of that firm's work through an actuarial audit completed by another firm. These audit services are acquired using the competitive acquisition process.

The current actuarial consultant was retained on January 15, 2000 as a result of the competitive acquisition process.

Summary of Cash Balance Benefit Program Provisions

(considered in the June 30, 1999 actuarial valuation)

Description of Program

The Cash Balance Benefit Program is considered a defined benefit plan under the provisions of the Internal Revenue Code. It is optional to school districts, community college districts or county offices of education as an alternative retirement plan. The CB Benefit Program is a primary retirement program for employees of California's public schools who are hired to perform creditable service for less than 50 percent of the full-time equivalent for the position.

Plan Eligibility Requirements

Employers may, through formal school board action, offer this program exclusively, or in addition to other alternative plans, and/or Social Security.

Table 11 Promotional salary increases (assumption for salaries due to promotions and longevity, exclusive of the assumed general wage increase)

Duration	Past Sample Entry Ages				Revised Sample Entry Ages (Unisex)					
	27	32	37	42	Under 25	25 – 29	30 – 34	35 – 39	40 – 44	45 & Up
Male										
1	8.0%	9.5%	9.8%	8.9%	6.1%	5.8%	5.5%	5.4%	5.4%	4.0%
10	3.6	2.6	1.9	2.0	3.2	3.0	2.7	2.3	2.2	1.6
20	1.1	0.7	0.7	0.4	1.2	1.1	1.1	0.7	0.7	0.5
30	0.7	0.6			0.9	0.7	0.6	0.4		
Female										
1	7.2%	7.7%	8.5%	5.4%						
10	3.1	2.5	2.7	2.6						
20	0.7	0.6	0.9	1.0						
30	0.3	0.4								

Table 12 Schedule of participant valuation data

Date (as of June 30)	Number	Annual Payroll	Annual Average Pay	% Increase In Average Pay
1996	Plan established July 1, 1996			
1997	495*	\$2,109,000	\$4,261	na
1998	3,505	\$18,832,000	\$5,375	26.1%
1999	6,412	\$50,426,000	\$7,864	46.3%

*Active participants with account balances

Table 13 Schedule of retired participants and beneficiaries added to and removed from rolls

Date (as of June 30)	Added to Rolls		Removed from Rolls		Rolls-End of Year		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
1996	Plan established July 1, 1996							
1997	0	\$0	0	\$0	0	\$0	na	na
1998	0	0	0	0	0	0	na	na
1999	0	0	0	0	0	0	na	na

Table 14 Solvency test

Valuation Date (as of June 30)	Aggregate Accrued Liabilities For			Actuarial Value of Assets	Funding of Liabilities		
	(1) Active Member Contributions On Deposit	(2) Future Benefits to Benefit Recipients	(3) Service Already Rendered by Active Members		(1)	(2)	(3)
1996	Plan established July 1, 1996						
1997	\$164,078	\$0	\$0	\$(393,000)	-240.0%	na	na
1998	\$1,727,705	\$0	\$0	\$2,083,000	120.6%	na	na
1999	\$5,000,613	\$0	\$0	\$5,224,000	104.4%		

Table 15 Analysis of financial experience

	Actuarial Valuation as of June 30	
	1999	1998
Actuarial Accrued Liability	\$5,000,613	\$1,727,705
Actuarial Value of Assets	\$5,224,000	790,000 ⁽¹⁾
Unfunded Actuarial Accrued Liability (UAAL)	\$223,387	\$ 937,705
Funded Ratio	104%	46%

(1) Reflects a \$1,293,000 loan from the Teacher's Retirement Fund that was discharged subsequent to the June 30, 1998 actuarial valuation. The result of the loan discharge provided a UAAL of (\$355,295) and a funded ratio of 121 percent. The loan discharge was effective January 1, 1999.

When an employer first elects to offer the program, employees employed to perform creditable service, and whose basis of employment (employee's formal contract) is less than 50 percent of the full-time equivalent for the position, become participants on the later of: (1) the first day in which creditable service is performed or (2) the effective date of the employer's governing board's action to provide the CB Benefit Program.

Elections

Employees have the right to elect coverage under either Social Security or an alternative plan in lieu of the CB Benefit Program if the employer's governing board's action provides for these options.

An election to participate in either Social Security or an alternative plan does not prevent an employee from electing to participate in the CB Benefit Program at a later date, as long as the CB Benefit Program is provided by the employer and the employee is eligible to participate in the program.

Discontinued eligibility

Employees shall cease contributing to the CB Benefit Program and become mandatory members of the CalSTRS Defined Benefit Program when the basis of employment (formal contract) changes to 50 percent or more of the full-time equivalent for the position, OR upon election to the CalSTRS DB Program, which may occur at any time.

Contributions

Each employer contributes a minimum of 4 percent of salary on behalf of each participating employee. Through the collective bargaining process, employers are permitted to pay different levels of employee and employer contributions, as long as the following conditions are met:

- 1) The sum of the employee and employer contributions equals or exceeds 8 percent of employee salary.
- 2) The employee and employer contribution rates are the same for each participant employed by the employer.
- 3) The contribution rates as determined under the collective bargaining agreement become effective on the first day of the program year and remain in effect for at least one program year.

Vesting

A participant has an immediate vested right to a retirement benefit equal to the sum of the balance of contributions, including any compounded interest earned on his or her employee and employer accounts.

Guaranteed Interest Rate

The CB Benefit Program has a guaranteed interest rate that is determined annually by the Teachers' Retirement Board. The rate is based on the average of thirty-year U.S. Treasury notes for the 12 months immediately preceding month before the rate is set.

Program Investments

CB Benefit Program contributions are invested at the direction of the board in internally pooled portfolios of the Teachers' Retirement Fund. The program has ownership of units of these pooled portfolios, which reflect market fluctuations of underlying securities on a daily basis. Units are purchased using the current market value per unit. Unitized funds are accounted for on a multiple class level, which entails the sharing of one portfolio by two or more owners. Income and portfolio level expenses are distributed to each class level on a pro rata basis determined by the amount of units owned as a percentage of the total units of the portfolio.

Gain and Loss Reserve

Funds accumulate in a gain and loss reserve to credit interest to participants' employee and employer accounts during years when the rate of return on investments is less than the guaranteed interest rate. Annual additions to the reserve are determined by the board on earnings in excess of those needed to credit the guaranteed interest rate and pay administrative costs. The gain and loss reserve will also be used to ensure adequate funds are available in the annuitant reserve for monthly annuity payments.

Additional Earnings Credit

After the end of the program year, when the total investment earnings for the immediately preceding program year are known, the board may declare an additional earnings credit. Any additional earnings credit will be applied to participants' employee and employer accounts.

Retirement Eligibility

Normal retirement age is 60, but a CB participant may retire as early as age 55. A participant must terminate all creditable service in the CB Benefit Program and apply for a retirement benefit. Distribution of a retirement benefit must begin by age 70 1/2, unless the participant is still working.

Retirement Benefit

The normal retirement benefit is a lump-sum benefit equal to the balance of credits in the participant's employee and employer accounts. The lump-sum payment may be eligible to roll over into an IRA, defined contribution plan or other eligible retirement plan that accepts such a rollover.

or

The participant may choose one of the following five annuities, if the participant's balance is \$3,500 or more: a single life annuity with a cash refund feature, a single life annuity without a cash refund feature, a 100 percent joint and survivor annuity, a 50 percent joint and survivor annuity, or a period-certain annuity.

Disability Eligibility

A participant may apply for disability at any time. All creditable service subject to coverage by the CB Benefit Program must be terminated prior to the disability date. A disability benefit will become payable only upon determination by the board that the participant has a total and permanent disability.

Disability Benefit

The normal distribution is a lump-sum benefit. The benefit amount is equal to the balance of contributions, interest and additional earnings credits in the participant's employee and employer accounts. There is also an annuity available in the same five retirement benefit options as long as the participant's account balance is \$3,500 or more.

Death Benefit

Death of Participant Prior to Retirement

The normal distribution is a lump-sum benefit. The sum of the balance of credits in the participant's employee and employer accounts is payable to the named beneficiary. If no valid beneficiary is designated, the lump-sum payment will be paid to the participant's estate.

Surviving Spouse

If a participant's surviving spouse is the only beneficiary to whom a death benefit is payable, the spouse may elect to receive the benefit in the form of an annuity, provided the sum of the balance of credits in the participant's employee and employer accounts equals or exceeds \$3,500. The surviving spouse may elect either a single life annuity without a cash refund feature or a period-certain annuity.

Death of Participant Receiving Annuity

The benefit payable will be in accordance with the form of annuity elected by the participant.

Termination Benefit (Refunds)

Upon termination of all creditable service for any reason other than death, disability or retirement, a participant may apply for a lump-sum termination benefit. The benefit amount is equal to the sum of the employee and employer accounts, plus compounded interest as of the date the benefit is paid.

Five-Year Rule

A participant may not apply for a termination benefit if less than five years has elapsed following the date the most recent termination benefit was distributed to the participant.

Waiting Period

The termination benefit is payable after one year has elapsed following the date of termination of employment. The application for the termination benefit will be automatically canceled if the participant performs creditable service within one year following the date of applying for the termination benefit.

Changes in Program Provisions

There have been no program amendments that would affect an actuarial valuation of CalSTRS since the last annual financial report was issued. All program provisions were considered in the completion of the June 30, 1999 actuarial valuation.